3-10-1967

The Amplifier - v. 12, no. 7

Associated Students of the Montana College of Mineral Science and Technology

Tech's E-Days attracts many visitors

An estimated 750 people took in exhibits at Montana Tech during E-Days, February 25 and 26. Displays were presented in physical education, geology, mathematics, the humanities, the language labs, the library, mineral dressing, metallurgy, physics-geophysics, petroleum, and engineering science.

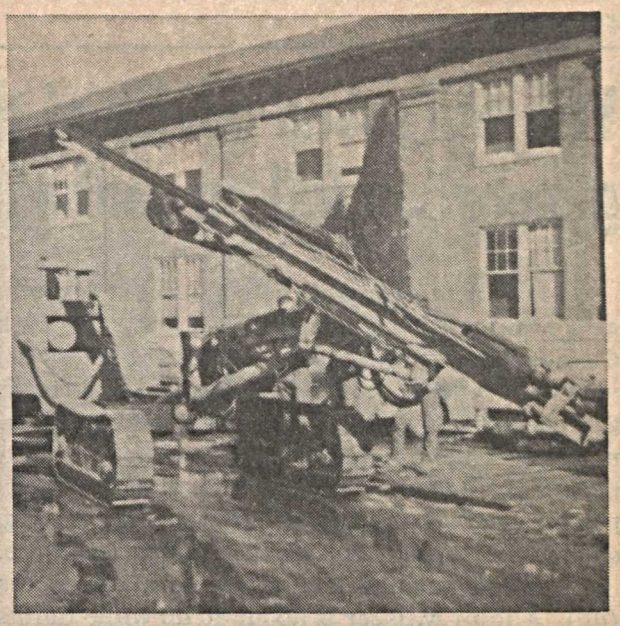
E-Days activities began at 1:00 P. M. Saturday. At 2:00 P. M. the judging of the exhibits began. The following members of the community were this year's judges: Dr. E. A. Bartiolli, President of The World Museum of Mining; Mrs. H. G. Dean, a member of the Executive Board of Montana College of Mineral Science and Technology; Mr. Erwin P. Frizelle, president of the Metals Bank & Trust Company; Mr. Charles Holstrom, superintendent of the Clyde E. Weed concentrator; and Mr. Dave Johns, Assistant Manager of Electrical Operations at Montana Power. Mineral dressing was awarded First Place and a cash award of $35. Metallurgy placed second for $25, and geology third for $15.

The judges stated that the E-Days presentations at Montana Tech were impressive, and that they were amazed at the amount and variety of equipment and facilities available to the students. After completing the judging, they offered a few suggestions for the next E-Days, two years from now. They first felt that the exhibits should be split into two divisions, engineering and arts and humanities, for judging since there are basic differences in the manner and kind of presentation between the two areas. Also, they felt that more people should be brought in as judges to better acquaint people of the community with Montana Tech.

During the two-day event, refreshments were served in the SUB by the AWS. On Sunday at 2:00 P. M., the Montana Tech Band presented a band concert for the public in the SUB. Movies that were shown at various times during E-Days were "Mine Makers" and "Montana Tech at Butte," geology; "This is Steel" and "Futures in Steel"—metallurgy; "Shaft Sinking," and "Raise Boring" —mining; and "Gemini IV" and "Gemini XI"—physics. Color and 3-D slides showings were arranged in the SUB, geology, and mining.

The presentations ended at 9:00 P. M. on Sunday and the exhibits were taken down.

Faculty members and members of the Anderson-Carlisle Society, the organization responsible for the E-Days event, expressed thanks and praise for the students who worked so well on the various exhibits.



During E-Days, the young miners above prepare to go underground in a short tunnel under the gym. For the adults, a small drill rig was demonstrated. Although it resembles a missile launcher in the picture above, it is aimed downward for productive purposes. (Photo courtesy Magma staff photographers)

The AMPLIFIER

Montana College of Mineral Science and Technology

Vol. XII, No. 7 | BUTTE, MONTANA | Friday, March 10, 1967

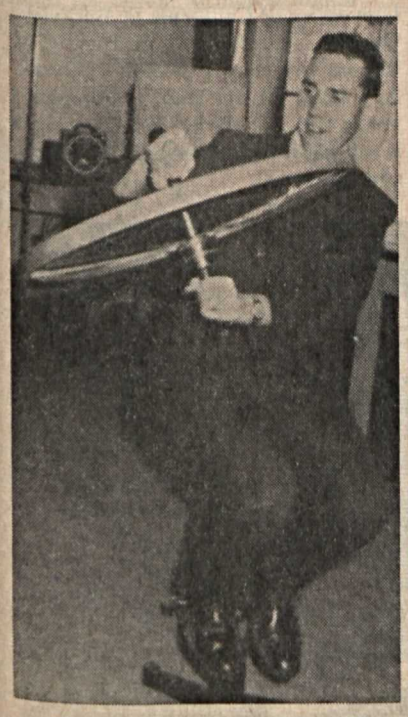
Four Montana Tech faculty members attend Los Angeles AIME meeting

Dean Gus Stolz, Professor Koehler Stout, Professor William Van Matre, and Professor Donald McGlashan recently attended the annual meeting of the American Institute of Metallurgical, Mining, and Petroleum Engineers in Los Angeles, California on February 19-23. On Sunday, February 19, they attended the minerals education sessions where problems of education of the mineral engineer were discussed. Educators discussed improving education of the mineral engineer and representatives from industry discussed what they wanted in the present day mineral engineer. The meeting was concluded Sunday evening with a dinner and an award to Doctor John C. Calhoun of Texas A & M as the outstanding mineral educator of the year. He presented an address with thought prevoking ideas on future education trends.

On Monday and Tuesday there were many technical sessions which covered all phases of the mineral industry from geology through refining and sale of the metallic products. On Monday evening, February 20, there was a Montana Tech alumni meeting in the Biltmore Hotel with approximately 80-85 alumni and their wives attending.

On Wednesday afternoon, Dean Stolz was a member of an industry-education panel which discussed the shortage of mineral engineers. The theme of this meeting was what the educators and industry could do to tell young people about the advantages, opportunities, and challenges in this mineral industry.

The meeting was concluded on February 23.



Giving a new twist to The Twist is Ray Jussila with a gyroscopic wheel.

Canadian wildlife is discussed at Tech

A lecture, accompanied by a color movie, was given by guest speaker, Edgar T. Jones, at the convocation Tuesday, February 21. The movie was entitled "Canada's Mountain Wilderness." Mr. Jones spent years roaming in the Canadian Rocky Mountains to film the sequences shown in the two reels of film. There were many close-ups of various forms of wildlife and there were also scenes of mountains, glaciers, lakes, and streams.

Mr. Jones is both a naturalist and a conservationist. Because he is also a bush pilot, he has been able to photograph animals and scenery in otherwise inaccessible areas. He founded the Alberta Wildlife Foundation, which sponsors lectures on natural history. He has also made natural history films on Africa.

International Club hosts Easter Dance

The traditional Easter Dance, sponsored by the International Club, will be held March 16 in the SUB.

This dance, one of the most popular during the school year, is a semi-formal date dance.

For the dance, the SUB will be decorated according to the theme "Easter Around the World" and refreshments, consisting of exotic food, will be served by the club members.

Music will be provided by Tony DiFronzo and his band.

The shocking displays in the Physics Department on E-Days made some people's hair stand on end.

Sigma Xi hears about life in Russia

"Russians are great readers." This statement was made by Dr. Robert S. Hoffman at the Sigma Xi Club meeting last Thursday night in his lecture entitled, "One Year In The Soviet Union." He went on to say that many Russians would read whenever they could.

Slides were given along with the lecture. Dr. Hoffman had pictures of such things as the summer palace of Peter the Great, the Kremlin, St. Isaac's Cathedral, a collective farm, a state farm, and many scenes of Leningrad and the Russian countryside.

On a collective farm the farmers are allowed to keep part of what they produce, whereas on a state farm the farmers are paid by the state and none of the crops belong to them. Most of the churches have been converted to museums and are only of historical importance by the Russian people. Dr. Hoffman also explained the Russian school children have to go to school six days a week, but their school day is only about four hours long. In Russia there is no particular shopping day. Instead Russian housewives might go shopping two or three times every day. Though there is mechanization on farms, farmers still use work animals.

Dr. Hoffman was in Russian from 1963 to 1964 on a National Academy Science Exchange Fellowship. Most of the time he and his family stayed in Leningrad while he attended the Zoological Institution. He studied the similarities of birds and animals on both sides of the Bering Strait.

Dr. Hoffman received his Bachelor of Science degree from Utah State University in June, 1950. He studied at the University of California at Berkeley for his advanced degrees and earned his M.A. degree, June, 1954 and his Ph.D., September, 1955. He is now a professor of zoology at the University of Montana.

56 make honor roll, 2 earn straight "A's"

Topping an honor roll of 56 students for the fall semester are Walter S. Bauer and John W. Cook with straight "A's".

Students having indices of 3.75 or better are Janine M. Alley, Angus Hemp, William C. Goldberg, Gary J. Kargacin, Clark L. Walters, Harvey P. Knudsen, Jr., David C. Koskimaki, Charles Parrett, Lucinda J. Sanderson, Cynthia M. Hastie, Dianne L. Martin, Lillian E. McCauley, Bobby R. Seidel, James P. Furaus, James R. Loomis, Robert S. Morrison, and John B. Rolando, Jr.

Students who received grade point averages between 3.50 and 3.75 are Dale O. Beck, Larry W. Wooden, Harry C. Sowers, Mary E. Redfern, Douglas M. Storer, Rosemary Boyle, Fredrick J. Hoffman, D. E. Giacomino, David E. Robbins, Ronald J. Verbeck, Ann T. Lear, C. L. Boston, Marilyn K. Shegina, Donald R. Dugdale, Claude D. Huber, Charles R. Hutt, Hilma M. Smith, Sharon D. Opp, and Janis M. Platt.

Those receiving indices in the 3.25 to 3.50 range are John T. Jonas, Robert D. Chew, Gary J. Dunford, James J. Benner, William C. Rust, Bonnie Fryett, David J. Wing, Thomas J. Schneider, Kenneth V. Tholstrom, Daniel D. McLaughlin, James P. Rice, Charles G. Snyder, Gayla G. Sprunger, Robert W. Wilson, William R. Lehfeldt, George-Ann Thurston, April A. Carroll, and Michael A. Duran.

Of the students on the honor roll, the twelve freshmen general students had an average of 3.64. Twelve seniors had an average of 3.63 as did four juniors. Seven sophomore enginering students averaged 3.59 while twelve sophomore general students averaged 3.56. The nine freshman engineering students had an average of 3.53.

The average class indices break down as follows: graduate (non-degree), 3.56, graduate (degree), 3.18; senior, 2.90; sophomore (general), 2.50; junior, 2.43; sophomore (engineering), 2.16; freshman (engineering), 2.05; and freshman (general), 1.95.

Research being reorganized here

Research and development activities at Montana Tech have been reorganized, according to a statement released by Professor Donald W. McGlashen, director of research and development.

Dr. Vernon Grifiths has been appointed assistant director; Mr. Victor Burt, business manager; Mrs. Helen McLaughlin, secretary; Mrs. Jessie Kavanaugh, bookkeeper; and Mr. Keith Johnson, legal counsellor.

Also formed were three groups: A Projects Control Group, Special Projects Group, and Projects Review Group. Members have not yet been appointed.

All groups will be affiliated with the Mineral Industries Development Foundation at Montana College of Mineral Science and Technology.

According to Professor McGlashen's statement, among the major functions of the college are "to examine critically, classify, integrate, and add to present knowledge; to examine proposed new procedures, theories, and ideas; to develop new arts and industries, new techniques, new applications of science, engineering, philosophy, new literature, and new truths in all fields of knowledge."

He also added that research results in increased service to the "economic and social interests of the State of Montana."

Will the sound advice of the older generation fall on deaf ears?

by STEVE BAUER

If you attend any of the popular dances to hear such bands as The Chosen Few, Friday's Children, The Innkeepers, or The Chequemates, you realize the musical trend is toward greater volume. Dancers rarely object since a stronger beat results. Certainly band members prefer loud music because it hides mistakes while producing a professional effect. However, many people are concerned that these high volumes will damage a person's hearing. An explanation of the factors involved shows that there is less danger than they claim.

For convenience, loudness is normally expressed in decibels (db). A faint whisper is about 40 db while normal conversation is around 65 db. Standing 35 feet from a riveter, you would hear 97 db of sound, a volume commonly recorded at rock 'n roll dances. Each additional 3 db means the volume has doubled — therefore, this music is normally 1,000 times as loud as normal conversation, a less impressive figure than it seems. If the local bands played this loud, there would be no reason to worry about damage to the ears.

If the sound is increased to 250 times this volume, the "threshold of feeling" is reached at 120 db, the point where young people can feel the pressure of the sound while older poeple feel slight pain or discomfort. Most experts agree that this volume can impair the hearing only over a long period of time.

When the sound level is increased another thousand times to 150 db, damage to hearing can occur very rapidly. If the Chequemates played at full volume in a closed room, they would easily produce this much sound. Interestingly enough, they have actually played at maxium volume at some dances, occasionally bursting speakers or drumheads. But this doesn't mean that anyone will go deaf. In a closed room, little of the sound energy can escape and the familiar reverberation occurs. When the room is crowded, some of the sound is absorbed by each dancer's body and clothing, reducing the reverberation and forcing the band members to turn up he volume to keep the music as loud as at the beginning of the dance. At high volumes, the dancers may absorb twice to four times as much energy as they expend dancing. However, this sound energy probably doesn't help the dancers, as some people like to think, because it is converted into heat rather than muscular energy.

If you are past thirty and find the music at a dance painful, or if you don't care for loud music, you can either stay home or open up the windows and "let some of the sound out" as Ernie Bond suggests. Since chaperones usually fall in the first group, high volume at dances might be part of a plot to keep them away. Certainly they, rather than the dancers, are the ones who will suffer from louder music.

College Days chairman reacts to editorial

Dear editor,

We were disappointed in your editorial in the Feb. 17 issue of the **Amplifier** concerning "College Days." We fell that you ignored the fact that there is an active program on campus, sponsored by a student organization, the Circle K Club, to recruit high school seniors as prospective students.

"College Days" were held last year on April 27 and 29, and over 134 students from six area high schools attended. The program included tours of the campus and an opportunity to attend classes. Tht success of the program is seen in the current 57.8% of the students presently enrolled here at Tech.

A program, such as M.S.U.'s High School Week, where testing for scholarships takes place, would be ill-advised for our school. We have neither the money for such scholarships, nor the facilities to accommodate such a program.

We are planning the expansion of our current program, and this year we expect about 300 participants in our "College Days." We invite you, Mr. Editor, to attend this program, to be held April 5 and 7, and observe first-hand the Circle K Club in its endeavor to recruit new students for Tech.

Dave Kneebone,
"College Days" chairman

Students who have constructive ideas are urged to write letters to the editor.

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Published 11 times during the academic year by the Asociated Students of the Montana College of Mineral Science and Technology, Butte, Montana 59701. Entered as Second Class matter on January, 1960, at the Post Office at Butte, Montana, under the Act of March 3, 1897, as amended.

STANDARD

Clee Zeigler examines a jaw crusher, shown in a cutaway section. The tools of mineral dressing range from large mechanical devices like this to small electrical apparatus.

Lower grade ores challenge the ingenuity of mineral-dressing engineers

Mineral dressing

Modern day mineral-commodity exploitation revolves more and more around processing plants designed to extract and concentrate very low-grade ore deposits. The day is fast approaching, and in reality may be here now, when high grade mineral deposits are unknown or of minor consequence in the provision of our national and international commitments and requirements of mineral, hence metal products. Thus, an advancing technology must keep pace with this decreasing supply of easily processed and exploited ores. This then is the area in which mineral dressing engineers find their challenges and rewards—treating the crude mineral crust of the earth to produce primary-consumer derivatives.

Kent McGrew inspects data from one of the sophisticated instrument assemblies that are used in mineral dressing.

At Montana Tech, the Department of Mineral Dressing prepares engineers to solve a multitude of problems in the areas of mineral saparations, transformations, process economics, process design, and marketing of mineral and metal substances. The mineral-dressing engineer must apply physical, physiochemical, and even nuclear sciences to obtain mineral and metal substances in desired purity for use directly or as alloyed with other metals.

Early in his career, the mineral-dressing engineer is likely to help plan and design improvements in existing facilities and to help develop new methods. As his level of competency increases, his prime responsibility will be in the operation and direction of several operational units within the firm.

The mineral-dressing engineer is truly a professional person and he must be well versed in the sciences, as well as in the engineering subjects. Under practically all situations he must be able to devote part of his time to the challenging field of research, both industrial and fundamental.

Research in the department of mineral dressing

Research—the gathering of new information, the finding of new principles and processes, and continuing research of existing processes and installations for the betterment of mankind is the underlying objective of the department of Mineral Dressing. The Department of Mineral Dressing is actively engaged in the following research projects:

A research project entitled "Asphalt Durability and Its Relation to Pavement Performance—Adhesion." The primary objective is to investigate the reactions between asphalt and mineral aggregate; that is, the adherence of an asphalt to an aggregate. The significance of this research is that it is expected to provide additional and more fundamental information needed to support the already well-developed schemes and systems for the employment of asphalt in highway construction. This research is affiliated with the National Cooperative Highway Research Program, and it is supported by a research contract with the National Academy of Sciences in the amount of $100,000.00. This research work began January 1, 1964 and with supplemental support will continue until July 30, 1967.

A study labeled "Electrokinetic Phenomena in Capillary Systems" is currently under investigation. In this investigation single- and multi-capillary systems are investigated to determine the effect of surface on streaming potential and to correlate with data from porous-plug systems. The objective here is to utilize the instrumentation developed in the above asphalt-aggregate study to relate streaming potentials and currents generated in porous plugs and those generated in capillary systems.

An investigation, "Particulate Recovery of Extremely Small-Size Copper-Bearing Minerals," is designed to determine the factors detrimental to the recovery of extremely fine-sized chalcocite and other copper sulfide minerals. Elemental parts of this research effort are as follows: (1) analysis of the particulate solids, (2) examination of the fluid phase, (3) interfacial reactions, and (4) design of particulate separation systems suitable for the recovery of fine-sized copper-bearing minerals.

"Selective Separation of Copper, Lead, and Zinc from Massive Sulfide Ores," is the title of another research project designed to analyze through basic considerations the environmental conditions and control of these conditions for selective separation of these sulfide minerals.

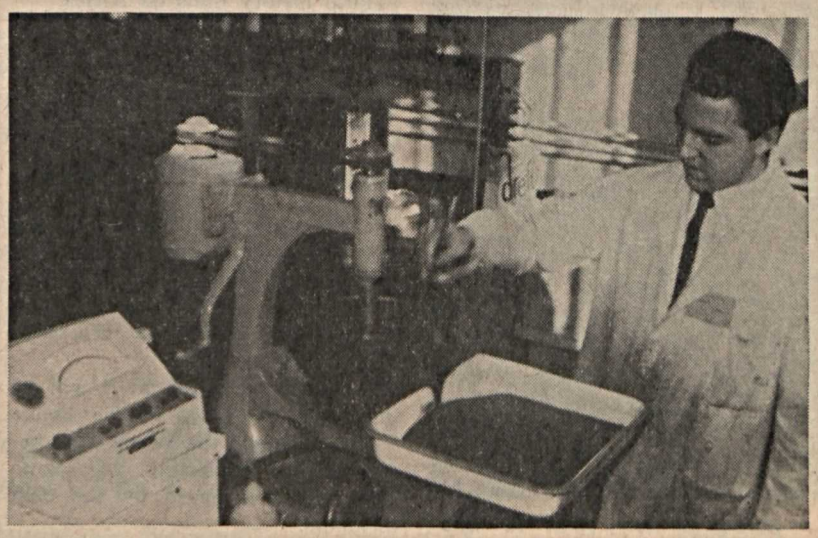
Mineral dressing staff

The mineral dressing department is currently staffed with two faculty members: D. W. McGlashan, Research Professor and Department Head, and A. D. Rovig, Assistant Professor. In addition, staff re-research engineers are often employed when additional supervisory or scientific personnel are required on various researech projects. The department also collaborates, in the exchange of ideas and utilization of specialized equipment, with other Tech departments and industrial concerns. Examples of these other groups are the Chemistry and Physics Departments, Montana Bureau of Mines and Geology, the Anaconda Company, White Pine Copper Company, and National Lead Company.

If this youngster comes back in a few years, he can learn modern ways of separating minerals.

Mineral dressing graduates

Graduates in Mineral-Dressing Engineering from Tech hold prominent positions in scientific, academic and industrial positions throughout the world. Graduates are employed by Kennecott Copper Corporation, National Lead Company, W. R. Grace and Company, White Pine Copper Company, The Anaconda Company, COMINCO American, University of California at Berkeley, Queens University, U. S. Bureau of Mines, American Metals Climax, American Molybdenum Company, Jones and Laughlin Steel Corp., and many other concerns both academic and industrial.



Harry Sowers demonstrates the basic technique of flotation, where minerals are separated from the gangue on a film of bubbles.

Examining a beaver in a lab for the evolution of life course are (left to right, seated) Dennis Hunt, Tifany Holverson, Bob Lonsen, Marge Berryman; (left to right, standing) Gary Dahl, Gary Benton, Professor Gilmour and Bob Bock (Photo by Jon Groff)

Evolution of life is subject of new course

A new geology course, The Origing and Development of Iife, is being conducted the spring semester. The three credit course meets on Tuesday and Thursday evenings at 7:00 p.m., under the instruction of Mr. Ernest H. Gilmour.

The class of twenty-one students devotes one period a week to lectures on primates and their common ancestor in the geologic past. In the lab, the students compare the bones of fossil vertebrates with living vertebrates and note the changes in the animals with the passing of geologic time for evidence of evolutionary development.

Mr. Gilmour expresses hope that the "course will present the students with a better understanding of the animals and plants that surround them in their everyday life."

Some of the students in Geology 200 have been heard to complain about scraping meat off of the bones of specimens. Mr. Gilmour explains that this is necessitated by the lack of specimens available for class. After a student has experienced the work involved with cleaning specimens, he tends to treat specimens with more respect. "Fox soup" is served free in Room 305, Main Hall every Thursday.

Tech Student Asks–

Does Tech ignore its general students?

". . . and a house divided against itself falls." (Luke 11, 14-28)

One may question the application of a biblical phrase to a discussion of our school. First of all, I ask the administration of this school to look at the freshman enrollment figure for 1966-67. There are (or were) over 300 in this freshman class. But gentlemen, what will the graduating class of 1970 number Last year it was less than 30. Why ?

Numerically, the general students outnumber the engineeering majors. Yet this minority consistently surpresses the voice of the majority. Just how long will this majority tolerate the second class status imposed on them by the minority? How can any institution reconcile this prejudicial air within an intellectual atmosphere? Can the administration of this school justify a staff of instructors that exceeds the total number of last year's graduating class?

The board of regents would certainly question a fiscal policy that only covered engineering majors and excluded general students. One would at least hear the voice of a trucking firm executive howling in protest. Tech has general students, but please keep them confined to the classroom even though their majors are in chemistry, physics, and math — this is an engineer's school. Gentlemen, how strange it is that only a few months ago Montana's legislature was bombarded by you with requests for degrees in these very fields. Today a math major is shunned as a general student, but upon Tech's receipt of degree granting powers in math, he would become academically acceptable. One may question the validity of my accusations, but can one honestly dismiss them?

Recall E-Days for concrete evidence. When was the last time a humanities department won? Or has this ever happened? We were given the impression that the judging would be based on the effectiveness, enthusiasm, and presentation of the exhibit by the students involved. Instead, the un-biased officials apparently judged the exhibits by this formula: mass X engineering divided by whose turn is it to win. Mechanical agility replaced student ability. If the role of the humanities department is only to show that Main Hall is occupied, then the students of these departments are merely tuition-paying tenents. And tenents move. This is why the class of '70 will be small. Yes, a house divided does fall — the supports of Main Hall are already beginning to creak.

— Nick Previsich

Vocational Interest Blank is discussed

The Strong Vocational Interest Blank, a test to help guide a student into the area where he is likely to find the greatest job satisfaction, is available to any student who would like to take it.

The cost is $1.25 since it must be sent to the University of Minnesota for scoring. Any interested student who wants to take the test may contact Mr. Maney. The test is taken on your own time at home.

The Strong Vocational Interest Blank helps to identify differences between occupations that college students usually enter. There are two tests, one for men and one for women. The pattern is the same on both tests, but the questions and occupations tested for vary.

Bond's Eye View

E-Days are over. This means that everyone can go back to their normal routine again. It was fun though. One good thing that usually results from talking about something in a particular department for two days is that the exhibitors begin to understand what they are talking about.

* * *

My hat is off to the humanities department, especially the language lab. I think they did a terrific job and had a very interesting display. And unlike the other major departments of the school, very little of their display belonged directly to the department.

* * *

Before next E-Days I would like to see a review of the judging procedure. There must be some way to judge the exhibits in a less hurried manner. Criteria for judging should include the quality, interest, and comprehensiveness shown in the explanation of the exhibit as well as in the visual effects of the display. Many exhibits of engineering skills and equipment have interest only if their use is understood. An example would be the geologist's hammer. Everybody knows what a hammer is and everybody has used one. So why show a hommer It is because when you are showing off the tools of the trade, the geologist's hammer is just as important to his field work as a claw hammer is to carpentry.

To repeat, I would like to see the judging done using time enough to appreciate what is being done. It is not fair to a group that has worked hard to set up their display and work up a good, easy explanation and then have the judges pass through as if there was a fire in the building.

* * *

I stopped in at the 'Mardi Gras' dance and immediately spotted the winners of the award for the best disguise. There were four or five fellas masquerading as musicians. They were evidently going by the old hillbilly cliche that "It doesn't have to be good as long as it's loud."

—ERNEST BOND

$5,000 offered to promote understanding

An award of $5,000 is now being offered for a comprehensive program to further understanding between the people of Great Britain and the United States.

Offered by the Edward L. Bernays Foundation, the award will be given for a manuscript, not to exceed 5,000 words, in which such a program is presented. The deadline is June 30, 1967.

Judges include three British and three American scholars and journalists.

The reason for the award, is that Bernays feels that the failure of understanding may result in serious political consequences. As an example of misunderstanding, he said that British mass media describe Americans as "brash, vulgar, aggressive, crude, warlike, non-intellectual, money-mad, sex-crazy, rat-racing, and ulcerous." Americans often see the British as "snobbish, degenerate, caste-ridden, undemocratic, tradition-bound, and homosexual."

Enquiries may be addressed to Secretary, Edward L. Bernays Foundation, 7 Lowell Street, Cambridge, Massachusetts 02138.

"He that hath wife and children hath given hostages to fortune; for they are impediments to great enterprises, either of virtue or mischief."

—Francis Bacon.

Adding a note of brightness to Tech's campus is Joani Robbins. Keeping busy in the mineral dressing labs is Bob Lehfeldt. (Photo by Jon Groff)

Joani Robbins, Bob Lehfeldt featured

Joani Robbins, a blue-eyed blonde, is a freshman in this issue's Spotlight.

She is a graduate of Girls' Central and takes American Literature, English, Sociology, Speech and Magma at Montana Tech.

Next year she plans to transfer to Bozeman or Missoula where she will major in interior decorating.

Joani's main like is her art lessons but other things which are of interest to her are the Student Union Building, parties, dances, and, of course, boys.

Joani can be seen with Evalie Byrnes, Karen Novack, and Gayle Robbins.

Bob Lehfeldt, a senior from Lavina, Montana, is majoring in Mineral Dressing.

Bob is an honor student at Montana Tech and is attending school on a scholarship. He is a member of Theta Tau fraternity and was vice-regent of this fraternity. He is now a member of the dorm council.

Besides HSS courses, Bob takes Instrumentation, Law, Seminar, and Research and Design.

Bob's likes are centered around outdoor life because he likes swimming, hunting, fishing, and about all other outdoor sports.

Mineral Dressing is Bob's major. He feels that it is a more practical field, being in a production line, and that is what he likes rather than a continual desk job.

After graduation Bob intends to work but he also hopes to come back in the future to do some graduate work.

The Denver police department is after you!

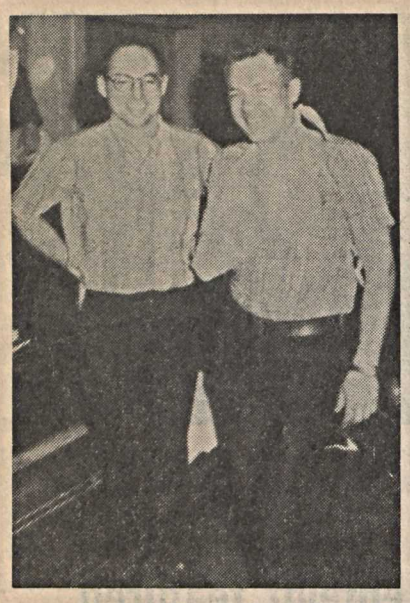
The Denver Police Department is currently conducting a recruitment program on Western college campuses to increase their manpower pool. They feel "that only intelligent, competent, and highly motivated personnel can render effective police service to the community."

Any interested male between 21 and 35 who is at least 5'8" tall and weighs 150 pounds, is eligible for a position in the police profession. In addition to his previous education, the applicant will be trained at the Denver Police Academy.

From the moment he is sworn in, a patrolman receives full pay. After three years he will be earning at least $588 per month. Promotions, with higher pay, will be made on the basis of competitive examinations.

Anyone interested in learning more about a position with the Denver Police Department should write to:

Denver Civil Service Commission
810-14th Street
Room 526
Denver, Colorado 80202



Dennis Hunt tries a little first aid on Jack Hihnala, who doesn't seem to be in much pain. The invading Martian at mine rescue is Bill Robinson in a gas mask. (Photo by Jon Groff and Henry McClernan)

Students learn mine rescue and first-aid

A course in Mine Rescue Training, required of all senior Mining, Geological, Petroleum, and Engineering Science students, was conducted at the Original Mine Rescue Station beginning Monday afternoon, February 27. Twenty hours of instruction was required to qualify for a certificate. The class was divided into two groups, Geology, Mining, and Petroleum students met February 27 through March 3, from 2:15 p.m. to 6:15 p.m., and Engineering students met March 6 though March 10, from 2:15 p.m. to 6:15 p.m.

Each student had to have a Physician's Examination Form filled out by the examining physician. Arrangements for the examiantion were made through the Registrar's office and were financed by the Student Health Fund. The examinations were conducted by Dr. Antonioli at his office.

First-Aid Training, which is required of all sophomore Engineering students, was conducted in the Montana Tech gymnasium, beginning Monday afternoon, February 27th. Those who could not attend the first week attended the session which began March 6th. One week of training was required to earn a certificate in First-Aid Training.

Osculation analyzed

Preliminary results of a study of osculation (kissing) conducted by the Infracaninophile Society reveal that over fifty-two (fifty-three to be exact) types have been identified. A few of the more important are listed.

A. **Hollywood or Aqua-Lung.** This is relatively static, with medium contact, no labial or lingual motion but long duration, lasting as long as 125 seconds. Hidden breathing through the corners of the mouth is possible.

B. **Annie Rooney.** This is a particularly humid type in which the labial motion is similar to that used in pronouncing "Glorioski, Zero." Preferred by heavy eaters.

C. **Fourth of July.** This is a class in which there is maximum labial and lingual motion, steaming, and overboiling. In the case of gum chewers, this type has proved fatal, and bacteriological tests indicate it may be a factor in the spread of mononucleosis.

D. **American on Rye.** This is a form of osculation with light, dry contact, duration less than 1/10 of a second. Its main use is for tentative goodnights and kissing parents.

E. **The Engineer.** Less common in the era of contact lenses, most of this type of osculation is in the planning — removing the glasses or positioning them to avoid shattering, careful placing of the nose to prevent squashing, washing the mouth out, shaving, etc. It is reported that some engineers never succeed at all.

Posing for a picture showing off the new band blazers are l. to r. Harry Sowers, Julee Leyden, Mr. Joseph Tretheway, director, Alan Koehler, and Pete Knudsen. The blazers are forest green with copper emblems. Recently the band has also purchased three new snare drums and a bass drum. (Photo by Jon Groff)

Dorm boys have interesting mail carrier

The boys at the dorm have an interesting mailman, a cheerful 6 foot-6 fellow named Charles Ljundberg. Charlie picks up the mail at the business office in the Library-Museum Building and delivers it to the dorm where he sorts it and places it in the appropriate boxes, usually just before noon.

Unlike the mailmen who must battle the proverbial rain, snow, sleet, and hail, Charlie can duck through the school tunnels from the Library to the Gym. The only possibly exciting part of his journey is crossing Park Street and avoiding wild instructors on their way home for lunch.

After attending Worcester Junior College for two years, Charlie receive his Associate in Mechanical Engineering. He is now in his third year of Engineering Science at Montana Tech. This is his second year as mailman.

The most interesting tool in Charlie's trade is his mailsack, which looks much like a pony express bag and may be just as old. It is believed to be the first bag used by the school since Montana States School of Mines is printed on one side. The school name has been changed twice since that name was first used.

Charlies Ljundberg sorts the mail before rushing it over to the anxious boys at the dorm.

Mock Election held on political issues

On February 14, 1967, a mock election, held in conjunction with eight other Montana college campuses, was conducted in the Student Union Building between 9 a.m. and 4 p.m. This election gave each student a chance to voice his opinion on several issues pertinent to college students and future citizens in the business world.

The issues voted upon were those which are now before the State Legislature. The issues involved were the voting age, a sales tax, a possible income tax increase and the possible lowering of the drinking age.

The outcome of this general election was 161-70 for lowering the voting age. Nineteen was the favored age, receiving 77 votes. There were 65 votes for 18 years, 22 for 20 years and 4 votes for others not listed. On the sales tax issue, 196 voted against and 37 for it. 150 voted against an increase in income tax and 81 believed it should be increased. Concerning the drinking issue, 144 favored a lowered age (19 was preferred age), while 83 wanted the drinking age to remain at 21. 213 of the students favored allowing the people of Montana to vote on the sales tax at a special election.

Creative writers organize

The newly formed creative writing group on campus meets each Wednesday in the SUB. The purpose of the group is to help each of the members to write creatively and well. Members write works, such as short stories and poetry, and then read them to the rest of the group for criticism.

About eight to ten students are in the group. Anyone interested is asked to contact Mr. Robert Athearn, the director of the group, for further information.

Sigma Rho selects officers, new members

At the last meeting of Sigma Rho on February 14 at 7:00 P. M., the following officers for the spring semester were elected: archon, Pete Norbeck; vice-archon, Charlie Ljundberg; treasurer, Steve Sands; secretary, Herb Sargent; scribe, Bob Morrison; and sergeant-at-arms, Bill Williams. A discussion of the initiation dinner followed. It was decided that the dinner should be held at the Vegas Club on March 4 at 7:00 P. M.

Later, a closed meeting was held to decide by vote the pledges who would become active. The following were accepted: Bob Hutt, Keith Jensen, Bill Stuart, Walter Olsen, Ted Williams, John Suydam, Nick Pentilla, Dan Piazola, and John Bowsher.

$2,000 scholarship open to students

Candidates for degrees in mineral engineering are eligible for the Henry DeWitt Smith Scholarship for the year 1967-1968. The award is $2,000 cash.

The purpose of the award is to assist a "worthy student in the pursuit of his graduate education in Mining, Metallurgical, and Petroleum Departments of leading colleges and universities." However, students in allied fields may apply.

The Henry DeWitt Smith awards are administered by the American Institute of Mining, Metallurgical, and Petroleum Engineers.

Interested students should contact Dean Gustav Stolz immediately for information on applying.

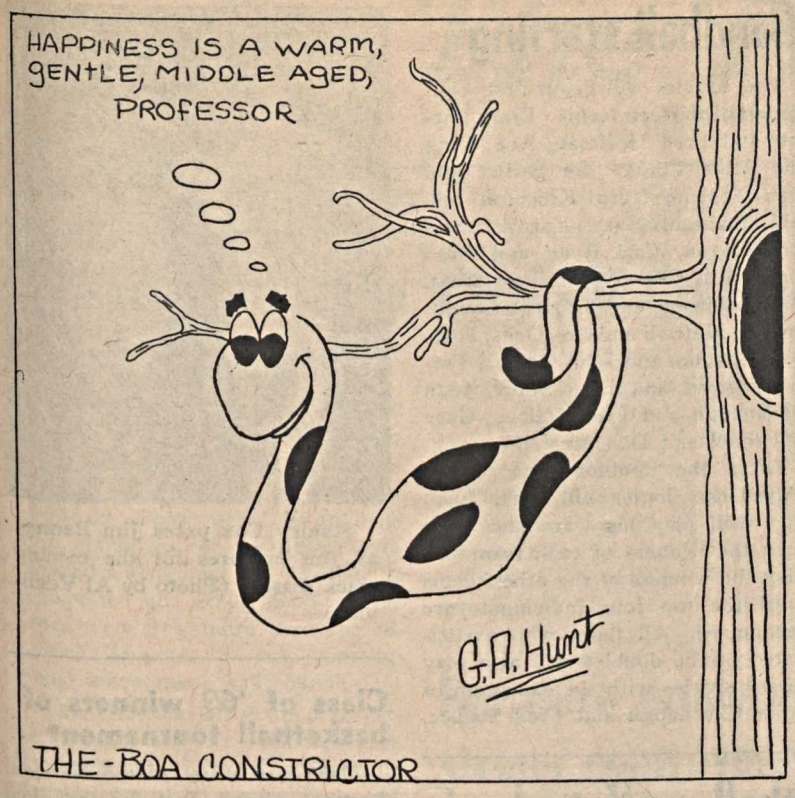
Mineral Club gives lapidary lessons

The Mineral Club has started a project to give lapidary lessons to anybody interested in learning to cut and polish rocks.

On Saturday afternoon, February 18, 1967, the first lesson was given to eight Montana Tech students. Each of the students started with a rough piece of Montana agate and proceeded to slab, trim, grind, polish, cuss and finally succeed in creating a Montana agate cabochon. The lessons are of practical type, that is, the students learn by actually grinding and polishing a stone.

The instructors are Pete Knudsen and Mike Garverich. The Montana agate used in the first lesson was donated by Mike Garverich. Both instructors urge everyone who would like to learn to cut and polish, or who is just interested in seeing what a lapidary does, to come to the next Saturday afternoon session on March 11, 1967. The sessions are held in the Mineral Club lapidary shop on the second floor of the Mill Building.

Advertisers support the school. Thank them when you buy something.



Films to be shown

Films concerning the Man-In-Space Program are being shown at Montana Tech in room 216 of the Metallurgy Building at 7:00 P. M. every other Tuesday.

Admission to these films is free and all films are in beautiful color. Each program lasts approximately one hour. The following films will be shown on Tuesday, March 21, 1967: "Gemini 8" is about the flight of Astronauts Armstrong and Scott. It shows excessive roll rate from a faulty thruster. "Gemini 10" tells about the flight of Astronauts Young and Collins. "Gemini 11" tells about the flight of Astronauts Conrad and Gordon with extravehicular activiity.

For further information concerning the Man-In-Space Program films, contact Professor McCaslin.

Dean Stolz takes trip to Washington

Gustav Stolz, Dean of Student Affairs and Head of the Petroleum Department, attended a meeting February 10th and 11th in Washington, D. C. of the Engineering Preparation Committee.

The meeting, sponsored by the National Society of Professional Engineers, was held to initiate new ideas leading to greater success in persuading more suitable candidates to enter the field of engineering and engineering aids.

The committee members were briefed on the need for more cooperation and more effective action. Statistics relating to the enrollment of high school seniors into engineering colleges were presented.

They concluded that their goals would contain a new and different program of literature and better distribution of the material.

Jaycees honor 1960 Tech graduate

Robert W. Hoy, a 1960 graduate of Montana Tech, has been selected by the national Jaycees for inclusion in its list of 1967's outstanding young men of America. Hoy lives in Glendora, California, with his wife and two daughters. He is now the general manager of western operations of BLH Electronics, Pasadena, California, a firm which makes electronic measurement devices.

Hoy was an instructor and draftsman in descriptive geometry during his last three years at Montana Tech. During his attendance at Tech, he was named in "Who's Who Among Students in American Universities and Colleges" in 1959-1960. He also ran a bowling alley and worked as a radio and television announcer weekends and evenings while at Tech.

Hoy, a native of Helena, is active in community affairs. He was a symposium organizer for the Instrument Society of America where he presented about a dozen papers across the nation at various symposiums. He was the secretary of the Southern California Chapter of the Montana Tech Alumni and has been active in the East San Gabriel Valley Chapter of Professional Engineers. He has participated in numerous seminars and is a frequent guest lecturer at industrial firms and colleges on the subject of strain gauge technology. Hoy was also the executive secretary for the Wtstern Regional Strain Gauge Committee four years.

Finagle Factor is presented

Several years ago John W. Campbell, editor of **Astounding Science Fiction**, and the readers of that magazine collected samples of Finagle's Laws. These "laws" have evolved from the experiments of thousands of scientists who have been frustrated by the fact that nature is not logical. Presented here is the "Finagle Factor."

Years ago—when the universe was relatively easy to understand—the Finagle factor consisted of a simple additive constant (sometimes known as variable constant) in the form:

$$X=y+K(1)$$

where any measured variable, x, could be made to agree with theory, y, by simple addition of the Finagle factor, K(1).

Later dificulties couldn't be solved so easily and so a fudge factor, K(2), was added.

$$X=K(2)y+K(1)$$

Powerful as this adjustment was, World War II studies in servo theory indicated a need for a still stronger influence. The diddle factor, K(3), was born and made to multiply the quadratic term.

$$X=K(3)yy+K(2)y+K(1)$$

It is felt that, at least at present, reality can be made to conform to mathematical theory with reasonable agreement on the basis of these three factors.

However, John W. Campbell feels there is a different basic structure behind the Finagle, fudge and diddle factors. The Finagle factor, he claims, is characterized by changing the universe to fit an equation. The fudge factor, on the other hand, changes the equation to fit the universe. And finally, the diddle factor changes things so that the equation and the universe appear to fit, without making any real change in either.

For example, the planet Uranus was introduced to the universe when Newtonian laws couldn't be made to match known planetary motions. This is a beautiful example of the application of the Finagle factor.

Einstein's work leading to relativity was strongly influenced by the observed facts about the orbit of Mercury. Obviously a fudge factor was introduced.

The photographer's use of a "soft-focus" lens when taking portraits of women over 35 is an example of the diddle factor. By blurring the results, photographs are made to appear to match the facts in a far more satisfactory manner.

—IRE Student Quarterly

Four AWS girls attend convention

Four girls representing the Associated Women Students at Montana Tech attended a state-wide AWS Convention held on the campus of Eastern College at Billings. Cheri Thornton, president of Tech's AWS, Carol Trythan, vice-president, Trudy Tomazich, and Darlene Wheeler went to this convention held February 17 and 18. Mrs. McBride, the sponsor for the group, also attended.

The theme of the convention was "This Door Swings Both Ways." The purpose of the convention was to vote on a constitution, elect state AWS officers, and finally to stress the need for more communication between the various members of the AWS throughout the state. Approximately fifty girls attended. These fifty girls represented AWS organizations from teh University of Montana, Montana State University, Northern, and Eastern, as well as Montana Tech.

The girls roomed at the dorms. Their schedule included panel discussions, banquets, and hearing various guest speakers besides attending the meetings themselves.

Astronauts put language in orbit

What the astronauts have done to the English language is the subject of some speculation by Mary C. Bromage in a recent edition of the G. C. Merriam Company's **Word Study.**

Many of the observations of the first men in space were put in technical terms, now increasingly familiar to the lay public — **perigee, telemetry, ionosphere, tropopause, albedo.**

Some new terms or new usages were formed also — **g-pulse, retro rockets, suborbital, yaw, horizon scannery inputs,** even **capsule.**

In the use of regular language, the astronauts showed that they weren't English professors, anyway. Colonel Glenn began his first press commentary with "First off, how long did I control on fly-by-wire?" Major Grissom found the sun "real bright."

Perhaps the most famous and widely used of the space locutions, however, is "A-OK."

In short, in meeting the problems of communication in a new venture, the astronauts blended a peculiar combination of highly colloquial American with the most sophisticated technical terminology.

If those Martians know English, we may not be able to understand them.

Odd Montana facts show colorful past

It should be of interest to all students to know just how far the State of Montana has come in the years since statehood. As late as the 1850's beaver and buffalo skins were the sole product of Montana. In it's first year of production, 1863, Alder Gulch surrendered ten million dollars in gold.

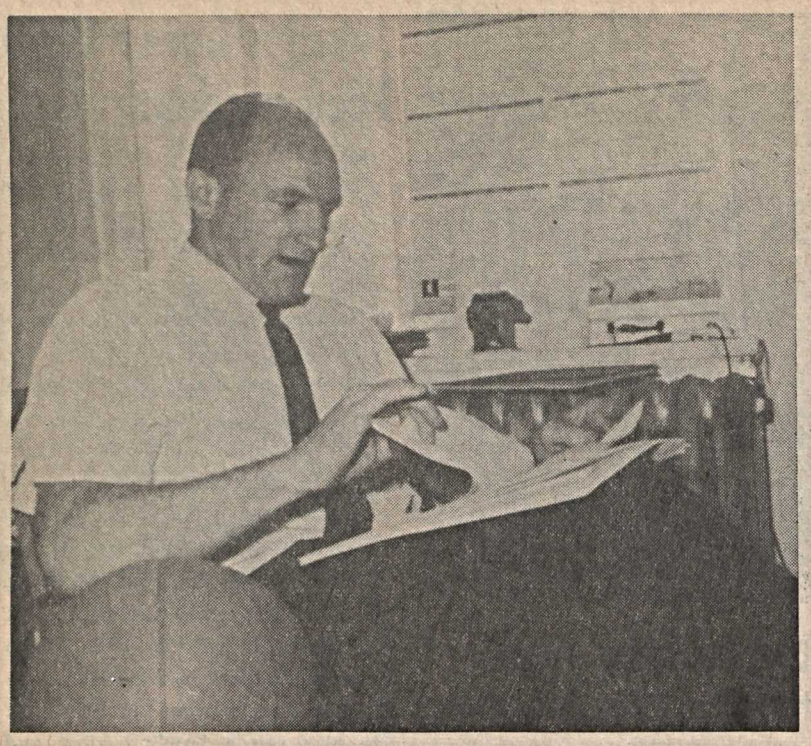
Marcus Daly and the Standard Oil Company backed legislation to name Anaconda the state capital.

F. A. Heinze, one of the "Copper Kings", sold out mining claims in 1906 for the total of ten and one half million dollars and one year later was pauperized in the Wall St. Panic of 1907.

Garfield County has only .4 persons per square mile; the U. S. average is 50.5 persons per square mile. Some more recent information showed that in 1962 Montana shipped 2.2 million Christmas trees to other states. A fact that should deflate the egos of some of the Butte students is that petroleum has become the most important mineral in Montana. It exceeds copper both in volume and in the value received for it.

LITTLE MAN ON CAMPUS

"HENDERSON HASN'T ADJUSTED TOO WELL AT HAVING TO TEACH **FOUR** SECTIONS OF REMEDIAL ENGLISH."



Contemplative but not discouraged, Coach Tom Lester reviews the season's basketball statistics. Although the record of wins was not an impressive one, he stressed that spirit, grit, and effort characterized Tech's team and he commended all his players for their performances. He commented that Tech would probably do better next season.

Rocky Mountain edges past Tech

The Rocky Mountain Bears, with the help of two free throws with only a few seconds left in the game, edged past the Montana Tech Orediggers,, Feb. 17, in Butte, with a close score of 56-53 in a Frontier League game.

Tech coach Tom Lester said his cagers put on their best performance of the season.

The Orediggers, for the first fifteen minutes of the game, held the lead until the Bears came back to tie the game 22-22 and then went on for a 36-25 halftime margin.

Tech then came back in the second half with a ball control offense putting the score at 51-49 late in the game. The Orediggers stayed within reach until Rocky's Edward Leggett froze the game with two seconds remaining putting the score at 56-53.

Nordquist was high scorer for the Orediggers with seventeen points while McEnaney chalked up twelve.

The Rocky Mountain Bears used their high scorers Leggett and Stiffler, each of whom shot fourteen points to help the Bears edge by Tech.

Coach Lester Comments

When interviewed after the Orediggers' last game, coach Lester had this to say about his cagers, "I am very happy with our team even though we did not win often. Because of the attitude and desire of the squad, the outlook for next season is very good. We do not have the real big man, but the team is learning to perform without the big man's services."

Top scorers of the season

The top scorers for the fourteen games that Montana Tech played were Gary Carlson, Ed Nordquist, and John McEnaney. The total number of points that all three scored was 441.

Gary Carlson, a Montana Tech junior, had a total of 161 points for an average of 11½ points a game.

Ed Nordquist, a junior, had a total of 154 points with an average of 11 points per game.

John McEnaney, a sophomore, ended the 14 games with 126 points while keeping an average of 9 points a game.

The Orediggers closed the season with a 2-12 record.

Intramural volleyball, handball starting

Volleyball

Intramural volleyball will begin sometime in early March, according to Coach Lester. The opening game will feature the Supermen vs. the Spikers and the Obituaries vs. Tapakegabrew. These four teams will start off the action for the first week of team play.

Every team will be able to play each other at least once; it is hoped that more than one round will be played.

At the end of the season a tournament will be held with all teams participating.

Awards will be given to the top teams.

Handball

Intramural handball will also begin sometime in early March with the contestants arranging their own schedule.

The doubles will begin first, consisting of thirteen teams: Craig Bartels and Fred Hoffman, Ace Wing and Mike Corak, Jim Benny and Dan Sebena, Vern Kingston and Bill Stanton, Gary Varosky and Ed Kavran, Carl Ryan and Brad Oniel, Bill George and Gary Hunt, Bill Robinson and Dan McLaughlin, Joe Mattioli and Les Ocks, Henry Klobuctan and John Odams, Terry Angrove and John Sutey, John Cavanaugh and Fred Dalbec, Gary O'Farrell and Dan McVeigh.

After the doubles have been played the singles will start. Each man will play his teammate first; then the winners of each team will play the winners of the other teams until the top four individuals are recognized. All those who participated in the doubles will also play in the singles with the exception of John Cavanaugh and Fred Dalbec.

Track, intramural softball, golf to begin

Track

The Montana Tech track team began its workout Monday, Feb. 27, outdoors and in the gym when weather did not permit. Some trackmen started practice before Monday in order to be in top competitive conditiion.

Coach Lester reported that his team will be strong in the running distance events and sprints, but they may be fairly weak in the field events.

The track team hopes to participate in at least three track meets.

Softball

Coach Lester also announced that h e will soon start intramural softball for all those who may be interested. Those who who are interested should contact coach Lester as soon as possible so that team rosters may be drawn up. Each team will play every other team with at least one round of games.

A tournament is also hoped to be organized for the teams to participate in.

Golf

Intramural varsity golf practice was put into full swing Monday, Feb. 27, with regularly scheduled practice sessions being held.

Regular playoffs have not yet been announced, but the practice sessions have already begun for some contenders.

Coach Lester announced that there will be some returning lettermen to the squad as well as some new golfers from high school.

More information on golf and intramural softball will be published in the next issue.

Tiddledywinks intercollegiate sport

Tiddledywinks, usually thought of as a child's game, has become an intercollegiate sport on the Eastern seaboard.

Using specially made mats from England, teams from Harvard, Princeton, and Yale hold yearly contests.

Requiring skill rather than muscle, tiddledywinks offers an opportunity for lovers and poets to outperform more burly but less finely coordinated athletes.

It seems more than likely that with increased leisure and demand for competitive activities to substitute for warfare (we hope), fast games like tiddledywinks may become increasingly popular, even among women, who are now invading the masculine domain of pool.

Stanley Cox paces Jim Benney as Jim prepares for the coming track season. (Photo by Al Vukovich)

Class of '69 winners of basketball tournament

The Class of '69, of the National League, placed first in the final playoff of the American-National League tournament Wednesday, Feb. 23, with a score of 49-40. They held a record of five wins against no losses going into the tournament.

Coming in second were the Tapakegabrew while Ptombmbl Bombers and Engineers 11 took third and fourth, respectively.

The team standings in the National League were: '69ers 5-0, Ptombmbl Bombers 4-1, Stonebreakers 3-2, Tau 1-3, Castors 1-3, and Lester's All Stars 0-3.

In the American League: Tapakegabrew 4-1, Lakers 3-2, Engineers 11-2, Sigma Rho 1-3, and the Chuga-Luggers 0-3.